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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
   Ammonium Sulfate

   Synonyms:
   Not applicable.

1.2. Relevant identified uses of the substance or mixture and uses advised against

   Fertilizer, spray adjuvant, food additive, laboratory use

1.3. Details of the supplier of the safety data sheet

   Vertellus LLC
   P.O. Box 730,
   Delaware Water Gap, PA
   800-344-3426

   e-mail Address: sds@vertellus.com

1.4. Emergency telephone number

   Vertellus: 1-800-344-3426
   CHEMTREC (USA): 1-800-424-9300 (collect calls accepted)
   CHEMTREC (International): 1-703-527-3887 (collect calls accepted)
   NRCC (China): +86 532 83889090

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture


   Not classified as hazardous under this directive.

2.2. Label elements

   Hazard Precautions:
   Not classified as hazardous under this directive.

   Prevention Precautionary Statements:
   Note: These precautionary statements are not prescribed by directive 1272/2008 as this product is not classified as hazardous under this directive. Wash hands thoroughly after handling with soap and water. Wear protective gloves, protective clothing, eye protection and face protection. If swallowed, in eyes, on skin or inhaled call a poison center or doctor/physician if you feel unwell. If inhaled, remove victim to fresh air and keep at rest in a comfortable position for breathing. Take off contaminated clothing before reuse. Store in a well-ventilated place. Keep container tightly closed.

SECTION 3: Composition/information on ingredients

3.1. Substances or 3.2. Mixtures

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>Concentration (weight %)</th>
<th>EC Number</th>
<th>CLP Inventory/Annex VI</th>
<th>EU CLP Classification (1272/2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Sulfate</td>
<td>7783-20-2</td>
<td>100%</td>
<td>231-984-1</td>
<td>Not listed</td>
<td>Not Classified as Hazardous</td>
</tr>
</tbody>
</table>

NOTE: See Section 8 for exposure limit data for these ingredients. See Section 15 for trade secret information (where applicable). See Section 16 for the full text of the R-phrases above.
SECTION 4: First aid measures

4.1. Description of first aid measures

Skin Contact: Wash with soap and water. Get medical attention if irritation develops or persists.

Eye Contact: Rinse eyes immediately with large amounts of water for at least 15 minutes, occasionally lifting the eyelids. Get medical attention if irritation or other symptoms exist.

Inhalation: Remove from exposure. If not breathing, give artificial respiration and call a physician.

Ingestion: If swallowed, do not induce vomiting. Get prompt medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Acute: Not expected to be irritating to skin or eyes. Not toxic by oral, dermal or inhalation routes. Not a sensitizer.

Delayed Effects: None known.

4.3. Indication of any immediate medical attention and special treatment needed

Note to Physician: No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Appropriate Extinguishing Media: Water spray, water fog, alcohol-resistant foam, carbon dioxide, dry chemical.

5.2. Special hazards arising from the substance or mixture

Hazardous Products of Combustion: Carbon dioxide, Carbon monoxide

Potential for Dust Explosion: No data available -- handle in a manner that prevents generation of potentially explosive dust.

5.3. Advice for firefighters

Basic Fire Fighting Guidance: Evacuate area and fight fire from a safe distance. Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuation Procedures: Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

6.2. Environmental precautions

Prevent releases to soils, drains, sewers and waterways.

6.3. Methods and material for containment and cleaning up

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Wear protective equipment during clean-up. Remove all ignition sources. Ventilate the area of spill or leak. Isolate the spill area, preventing entry by unauthorized persons. Carefully scoop up and place into appropriate disposal container. After collection of material, flush area with water. Dispose of contents & container in accordance with local, regional, national or international regulations.

6.4. Reference to other sections

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean up material disposal instructions.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for Unique Hazards: Not applicable.

Practices to Minimize Risk: Wear appropriate protective equipment when performing maintenance on contaminated equipment. Wash hands thoroughly before eating or smoking after handling this material. Do not eat, drink or smoke in work areas. Prevent contact with incompatible materials. Avoid spills and keep away from drains. Handle in a manner to prevent generation of aerosols, vapors or dust clouds.

Special Handling Equipment: Avoid contact with eyes and skin.

7.2. Conditions for safe storage, including any incompatibilities

Storage Precautions & Recommendations: Keep away from heat, sparks, and flame. Keep container closed when not in use.

Dangerous Incompatibility Reactions: Strong oxidizers, strong bases, potassium chlorate, potassium nitrite and sodium hypochlorite.

7.3. Specific end use(s)

If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to this annex for the specific exposure scenario control parameters for uses identified in subsection 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Country</th>
<th>Occupational Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada - Quebec, Singapore, S. Korea</td>
<td>10 mg/m³ as an 8-hour time-weighted average</td>
</tr>
<tr>
<td>Belgium, New Zealand</td>
<td>10 mg/m³ (inhaled); 3 mg/ m³ (respirable fraction)</td>
</tr>
<tr>
<td>US OSHA</td>
<td>15 mg/ m³ (total dust); 5 mg/ m³ (respirable fraction)</td>
</tr>
</tbody>
</table>

Air Monitoring Method: Gravimetric analysis for total particulate and respirable fraction (<10 microns).

8.2. Exposure controls

Also see the annex to this SDS (if applicable) for specific exposure scenario controls.

Other Engineering Controls: All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided. All operations should be conducted in well-ventilated conditions.

Personal Protective Equipment: Wear impervious gloves (i.e., latex rubber), boots, work uniform and safety glasses. If respiratory protection is needed or desired, use an appropriate air purifying respirator.


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Environmental Exposure Controls:
The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance, State &amp; Odor (ambient temp)</td>
<td>Essentially odorless solid</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>H$_8$N$_2$O$_4$S</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>132</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>2.573 kPa @ 25°C</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Specific Gravity or Density</td>
<td>1.77 g/cm$^3$</td>
</tr>
<tr>
<td>Vapor Density (air = 1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing / Melting Point</td>
<td>&gt; 280 °C</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>767 g/L @ 25°C</td>
</tr>
<tr>
<td>Octanol / Water Coefficient</td>
<td>0.48 @ 25°C</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash Point and Method</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>Flammable Limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not flammable</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>&gt; 280 °C</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not an oxidizer</td>
</tr>
</tbody>
</table>

SECTION 10: Stability and reactivity

10.2. Chemical stability
Stable

10.3. Possibility of hazardous reactions
Polymerization is not expected to occur

10.4. Conditions to avoid
There are no known unusual fire or explosion hazards associated with this material.

10.5. Incompatible materials
Strong oxidizers, strong bases, potassium chlorate, potassium nitrite and sodium hypochlorite.

10.6. Hazardous decomposition products
Products of incomplete combustion may include CO, CO$_2$, NO$_x$, and dense smoke.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Oral LD$_{50}$</td>
<td>4250 mg/kg (rat)</td>
</tr>
<tr>
<td>Acute Dermal LD$_{50}$</td>
<td>&gt; 2000 mg/kg (rat)</td>
</tr>
<tr>
<td>Skin Irritation</td>
<td>Non-irritating to skin</td>
</tr>
</tbody>
</table>
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Eye Irritation: Non-irritating to eyes.
Skin Sensitization: Not a sensitizer
Mutagenicity: No evidence of mutagenic effects
Reproductive / Developmental Toxicity: No evidence of reproductive effects
Carcinogenicity: No evidence of carcinogenic effects
Target Organs: None known
Primary Route(s) of Exposure: Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure.
Most important symptoms and effects, both acute and delayed Not expected to be irritating to skin or eyes. Not toxic by oral, dermal or inhalation routes. Not a sensitizer. Delayed Effects: None known.

SECTION 12: Ecological information

12.1. Toxicity
LC50(96h) Brachydanio rerio (Zebra fish) 480 mg/L
LC50(96h) Daphnia magna > 100 mg/L
EC50 Chlorella vulgaris 2700 mg/L

12.2. Persistence and degradability
Not applicable – inorganic substance

12.3. Bioaccumulative potential
Biocentration is not expected to occur.

12.4. Mobility in soil
This material is soluble in water. Its adsorption to soil and sediment should not be significant.

12.5. Results of PBT and vPvB Assessment
This substance is not a PBT or vPvB.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
US EPA Waste Number: Non-Hazardous
Waste Classification: (per US regulations) The waste may be classified as "special" or hazardous per State regulations.
Waste Disposal:
NOTE: Generator is responsible for proper waste characterization. State hazardous waste regulations may differ substantially from federal regulations. Dispose of this material responsibly, and in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws, and environmental protection duty of care principles. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate classification code according to the European Community List of Wastes should be used. Note that disposal regulations may also apply to empty containers and equipment rinsates.

SECTION 14: Transport information

The following information applies to all shipping modes (DOT/ATA/ICAO/IMDG/ADR/RID/ADN), unless otherwise indicated:

14.1. UN number Non-hazardous
14.2. UN proper shipping name Chemicals, n.o.s. (Ammonium Sulfate)
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14.3. Transport hazard class(es)  Not applicable  
14.5. Environmental hazards  Not applicable  
14.6. Special precautions for user  No data available.  
NA Emergency Guidebook Numbers:  Not applicable  
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code  Not applicable  

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Chemical Inventory Lists:  
- USA TSCA: Listed  
- EINECS: Listed  
- Canada(DSL/NDSL): DSL  
- Japan: Listed  
- Korea: Listed  
- Australia: Listed  
- China: Listed  
- Philippines: Listed  
- Taiwan: Listed  
- New Zealand: Listed  

German Water Hazard Classification:  
- WGK number 296 (Ammoniumsulfat)  

SARA 313:  
- Not Listed  

State Regulations:  
- This product contains chemicals listed on the Massachusetts Substance List for Right-to-Know Law.  
- This product contains chemicals listed on the New Jersey Department of Health Hazard Right-to-Know Program Hazardous Substance List.  
- This product contains chemicals listed on the Pennsylvania Department of Labor and Industry Hazardous Substance List.  
- This product contains chemicals listed on the Rhode Island Hazardous Substance List.  

HMIS:  
- HEALTH: 1  
- FLAMMABILITY: 0  
- PHYSICAL HAZARD: 0  

15.2. Chemical safety assessment  
Not applicable.  

SECTION 16: Other information

Classification Method:  
- On basis of test data  
Legend of Abbreviations:

ACGIH = American Conference on Governmental Industrial Hygienists.  
CAS = Chemical Abstracts Service.  
DSL/NDSL = Domestic Substances List/Non-Domestic Substances List.  
EC = European Community.  
LD = Lethal Dose.  
NIOSH = National Institute of Occupational Safety and Health.  
NTP = National Toxicology Program.  
OSHA = Occupational Safety and Health Administration.  
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EINECS = European Inventory of Existing Commercial Chemical Substances.
ELINCS = European List of Notified Chemical Substances.
EU = European Union.
GHS = Globally Harmonized System.
LC = Lethal Concentration.
PEL = Permissible Exposure Limit.
RQ = Reportable Quantity.
TLV = Threshold Limit Value.
WHMIS = Workplace Hazardous Materials Information System.

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Revision Details: Updated sections for GHS format
Original Date of Issue: 5 Mar 1995
Email: SDS@Vertellus.com

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